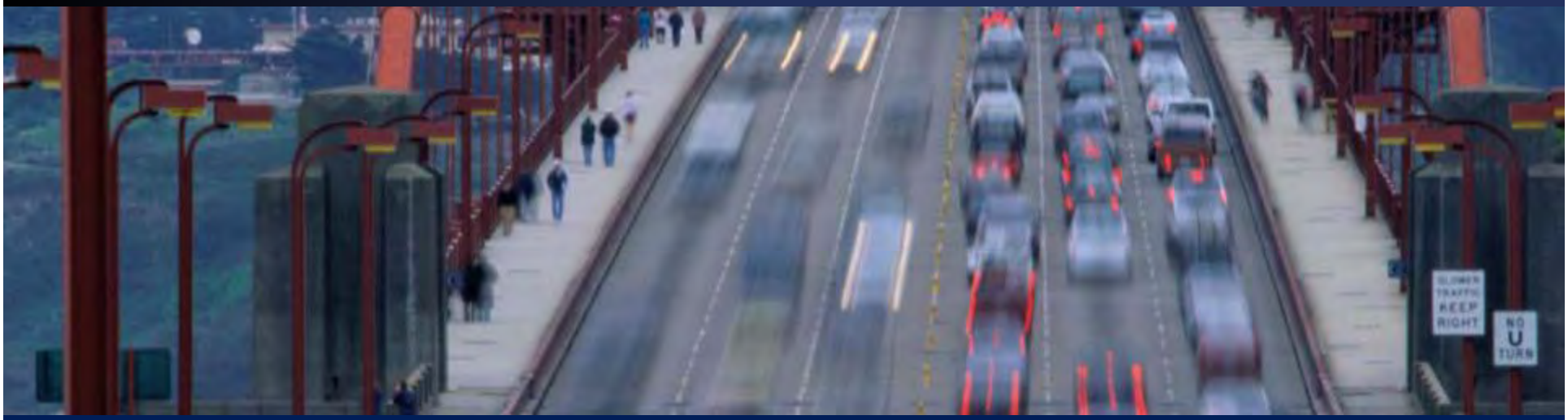
Overview and National Traffic Scorecard

Bryan Mistele, CEO, INRIX



INRIX

Washington State Transportation Commission
March 18, 2009

Agenda

- About INRIX
- Public Sector Applications
- Traffic Scorecard

About INRIX

A History of Innovation

INRIX forms partnership with Clear Channel Total Traffic Network

INRIX formed, spins out predictive traffic IP from Microsoft

INRIX launches "Smart Dust Network" featuring exclusive access to GPS Probe data from over 500k vehicles

INRIX Delivers Real-Time Speed & Flow Information for 36 Metropolitan Markets

INRIX Announces Dynamic Fuel Prices Service

INRIX Introduces Real-Time & Predictive Traffic Application for Windows Mobile

INRIX Real-Time Flow Coverage Reaches Milestone of 100 U.S. Markets

MapQuest & INRIX Deliver Traffic-Enabled Navigation Solutions

INRIX Offers Pan-European Road Traffic Information , with coverage in 16 countries

INRIX Launches Real-Time Traffic Flow coverage in Canada

INRIX Launches Real-Time Traffic Flow Across Europe

2005 | 2006 | 2007 | 2008 | 2009

J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J

INRIX launches initial 15 markets of traffic based on DOT data

INRIX forms partnership with Tele Atlas and acquires TA's Traffic Operations Group

Frost & Sullivan Study Recognizes INRIX as the Leading Provider of Real-Time Traffic

INRIX launches Nationwide Average Speeds, offering historical coverage on 750K miles of roads

INRIX launches traffic across UK

INRIX Expands Real-Time Traffic Flow to 73 US Markets & 47K Road Miles

TomTom Includes INRIX on all US Traffic-Enabled Content and Services

TeleNav Inc. Selects INRIX as Traffic Information Partner for TeleNav Navigator

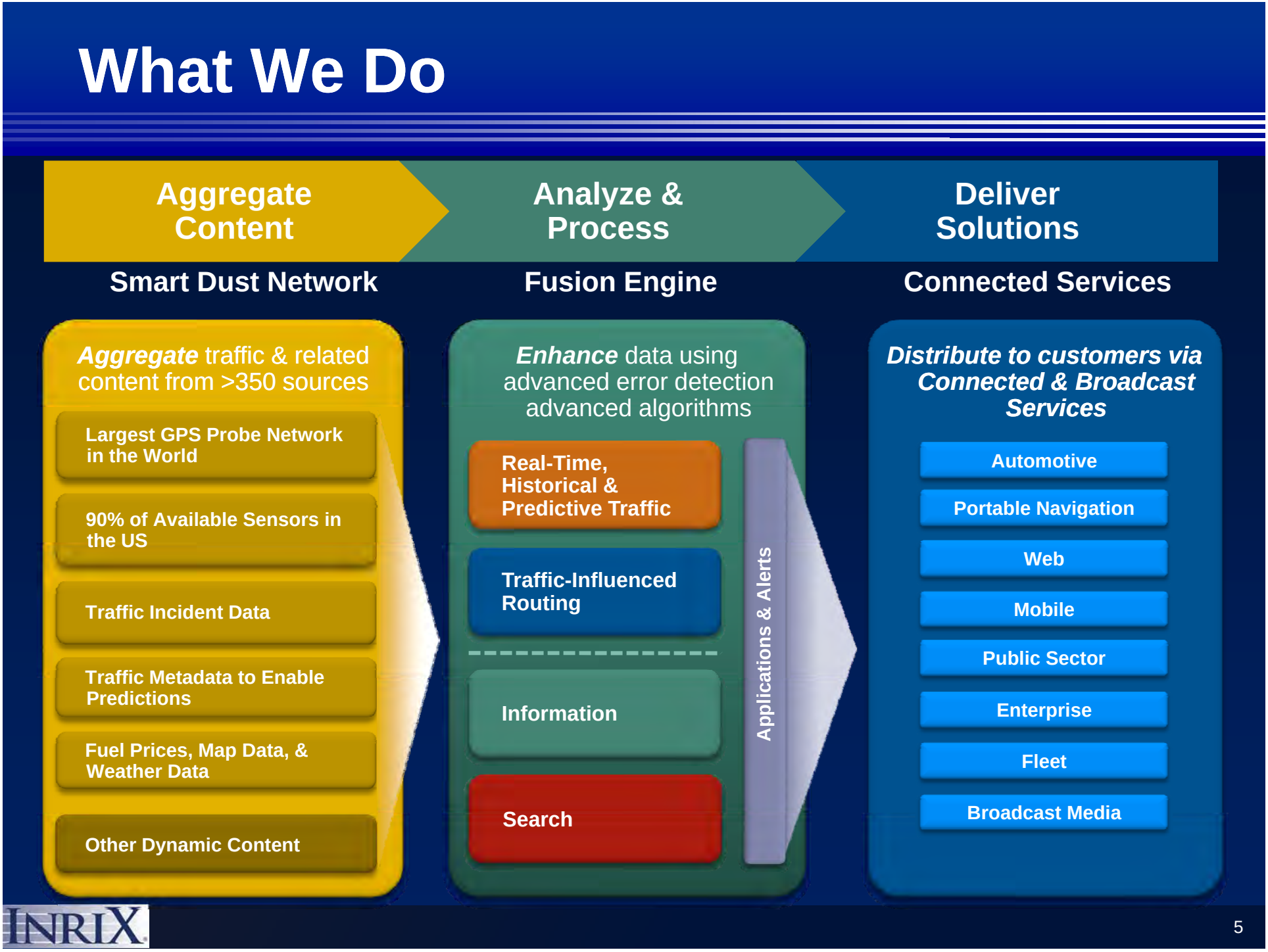
INRIX Launches Connected Services platform and world's first 3rd Generation Routing Engine

INRIX Launches Real-Time Traffic Alerts Across U.S. Highway System

INRIX Deliver Real-Time Traffic Information for 16 State I-95 Corridor

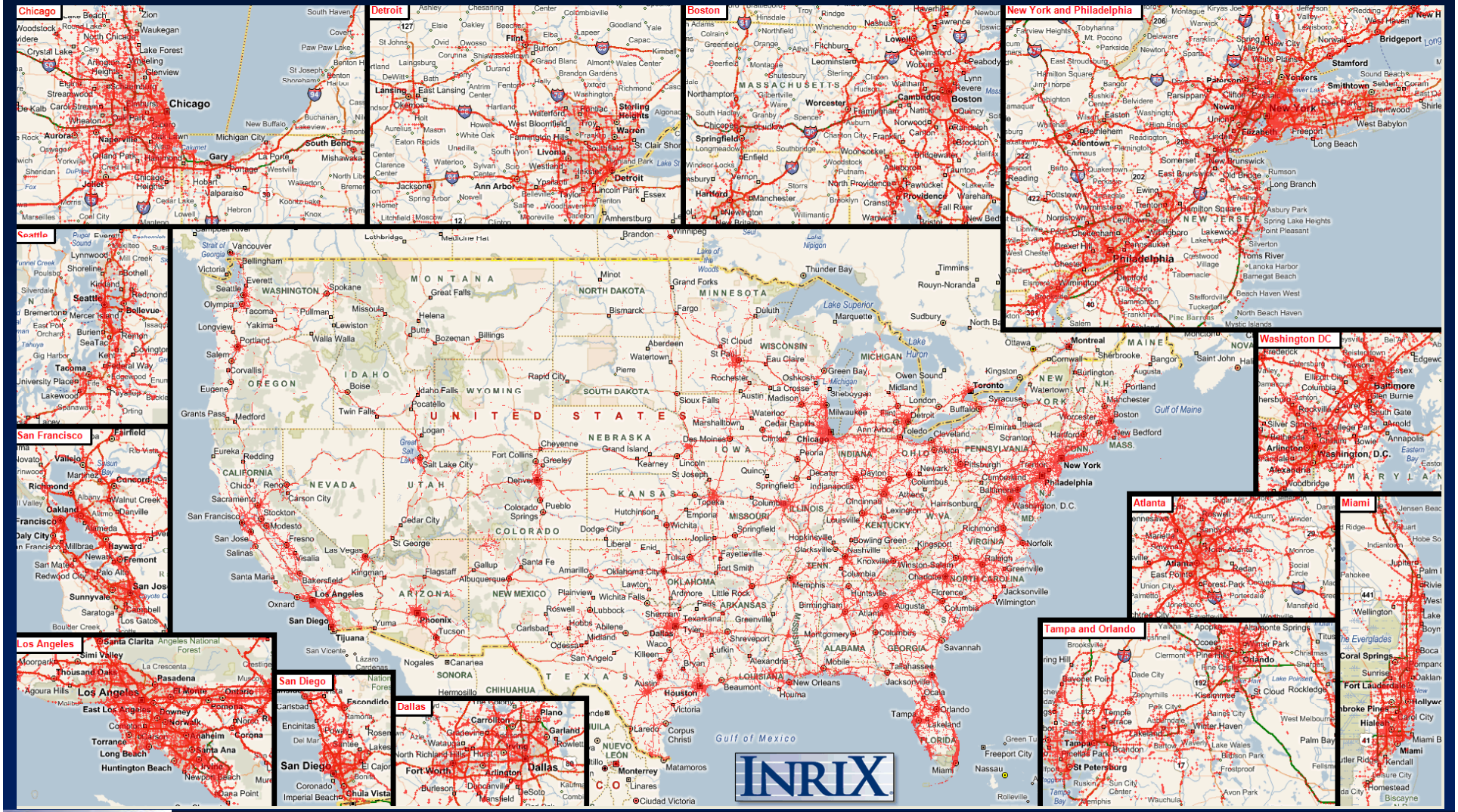
First Telematics Solution Using INRIX Connected Services Launches

What We Do


Aggregate Content
Analyze & Process
Deliver Solutions
Smart Dust Network
Fusion Engine
Connected Services
Aggregate traffic & related content from >350 sources
Largest GPS Probe Network in the World
90% of Available Sensors in the US
Traffic Incident Data
Traffic Metadata to Enable Predictions
Fuel Prices, Map Data, & Weather Data
Other Dynamic Content
Enhance data using advanced error detection advanced algorithms
Real-Time, Historical & Predictive Traffic
Traffic-Influenced Routing
Information
Search
Applications & Alerts
Distribute to customers via Connected & Broadcast Services
Automotive
Portable Navigation
Web
Mobile
Public Sector
Enterprise
Fleet
Broadcast Media

GPS Probe Network

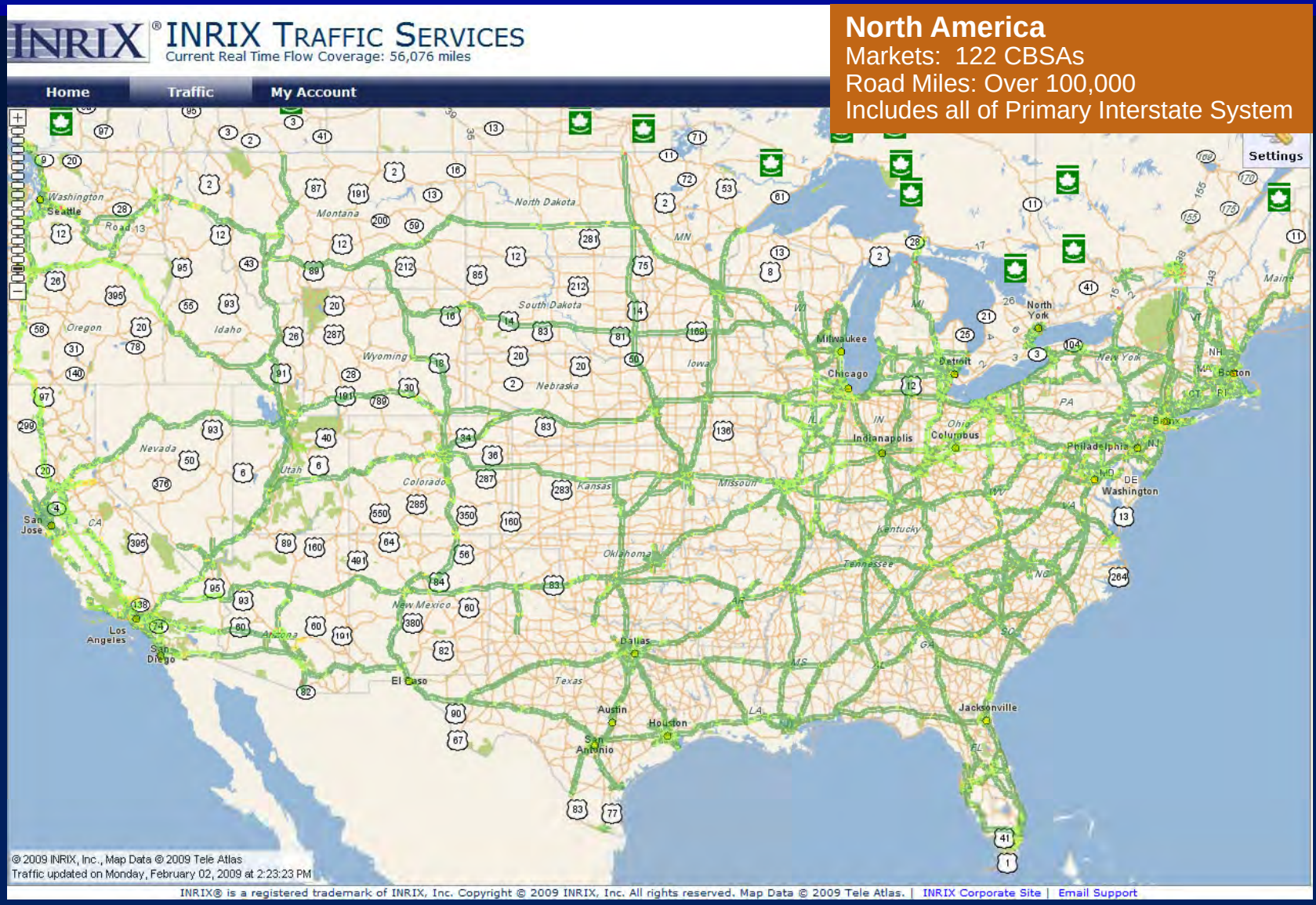
Over 1B usable GPS data points per month, 500K every 15 minutes



INRIX Key Customers

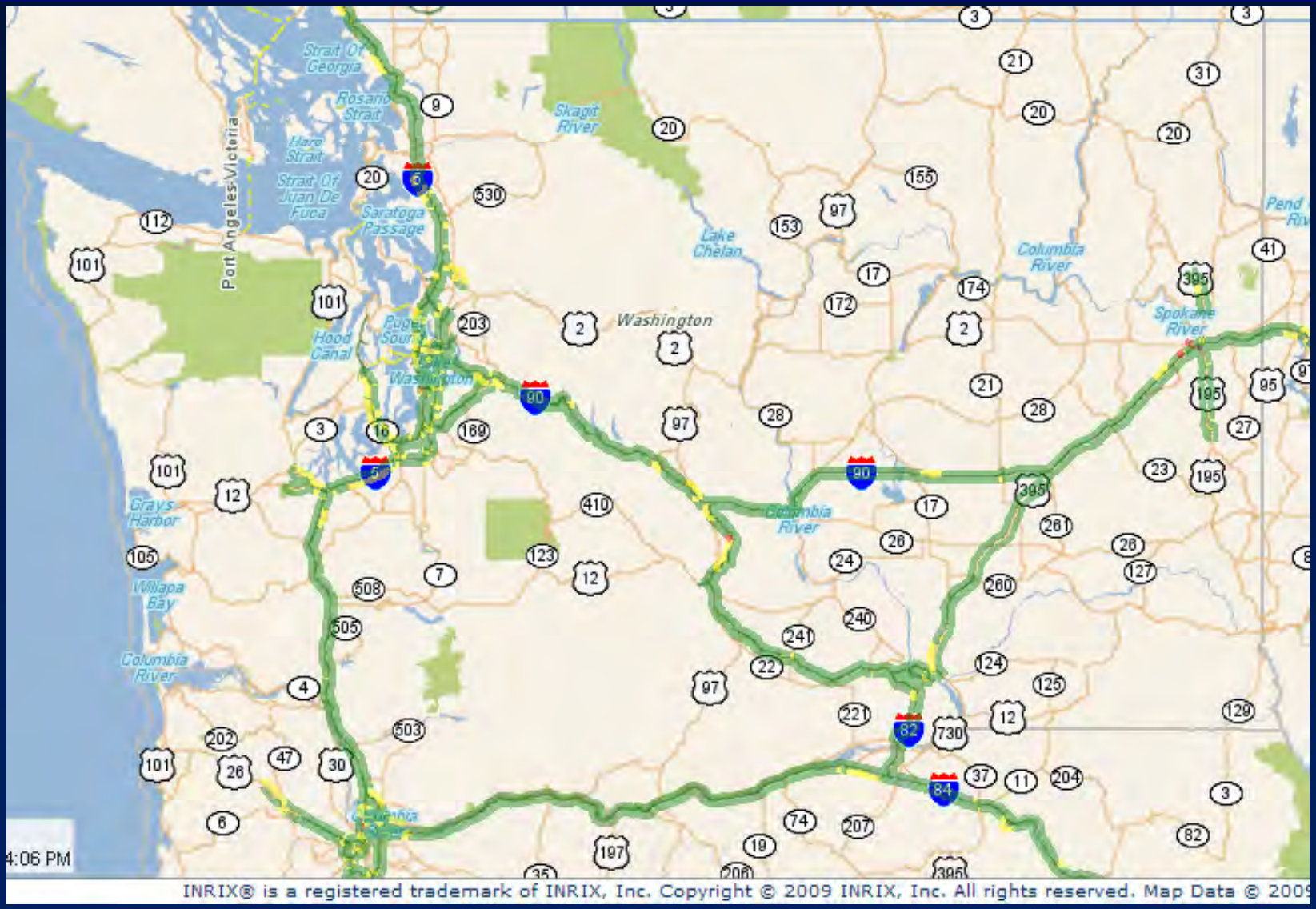
Select INRIX Traffic-Enabled Devices

INRIX Real-Time Flow/Alert Coverage



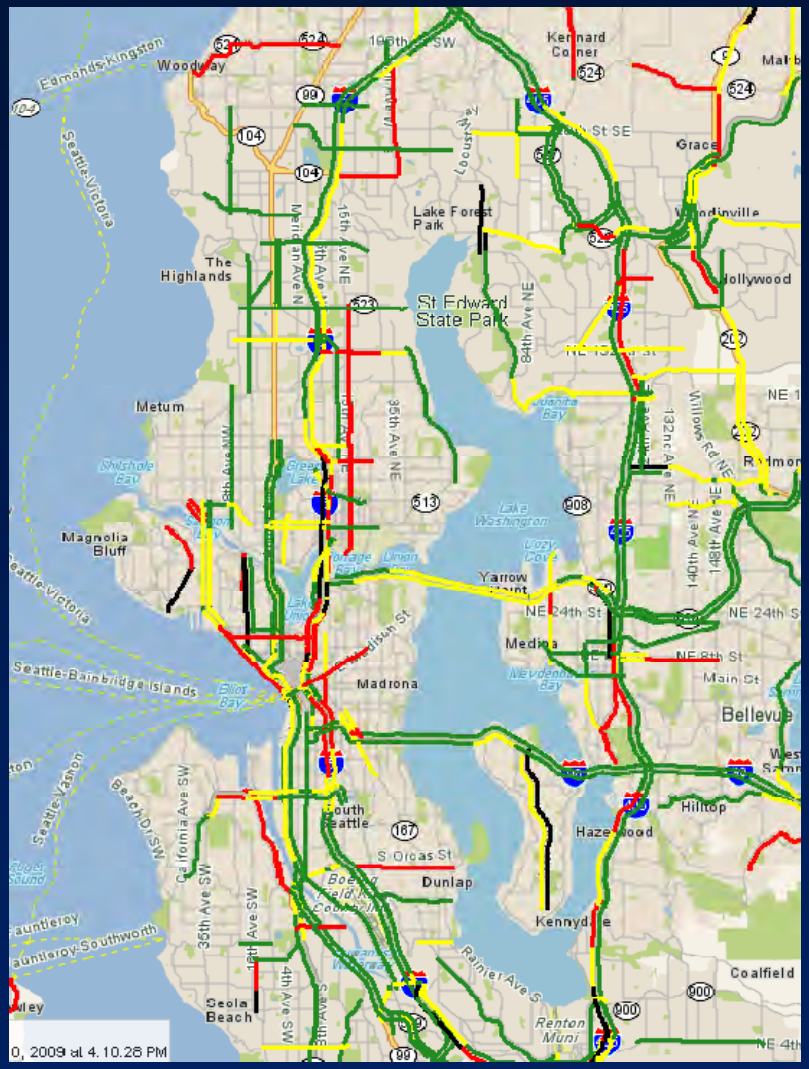
North America
Markets: 122 CBSAs
Road Miles: Over 100,000
Includes all of Primary Interstate System

Washington State Coverage

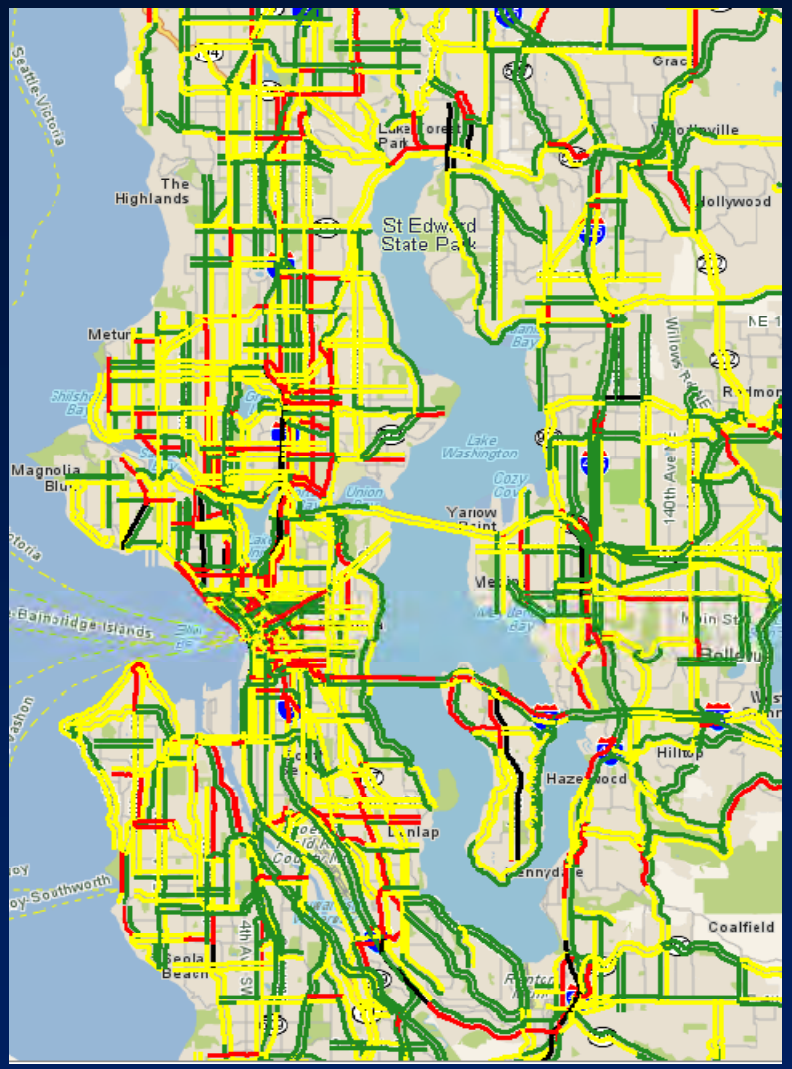


Seattle Metro Coverage

Real-Time



Total Fusion



Public Sector Applications

INRIX is the nation's leading provider of private traffic data to government agencies —

INRIX intelligently blends data from hundreds of public and private sources – including the world's largest GPS vehicle probe network – to create a seamless picture of travel speeds and conditions across the primary roadways of the nation. Our unique technology and public-private partnership approach to doing business enables INRIX to provide the most accurate and comprehensive traffic data to the most extensive roster of public and private customers throughout the United States.

11 states, 5000 miles under contract (and growing) — Leading transportation agencies, consultants, integrators, and academic institutions are using our data today to support their operations, applications and analyses. Collaborating with these early adopters, INRIX has been able to refine and hone our product offerings, pricing and licensing terms, as well as demonstrate the value of our data to the public sector. INRIX real-time traffic information is available to the I-95 Corridor Coalition and government transportation agencies under contract in 11 states including Alabama, Delaware, Florida, Maryland, New Jersey, North Carolina, Pennsylvania, South Carolina, Virginia, Washington, D.C., and Wisconsin. We also have real-time, predictive and historical traffic services available today covering all major roadways in your state/region.

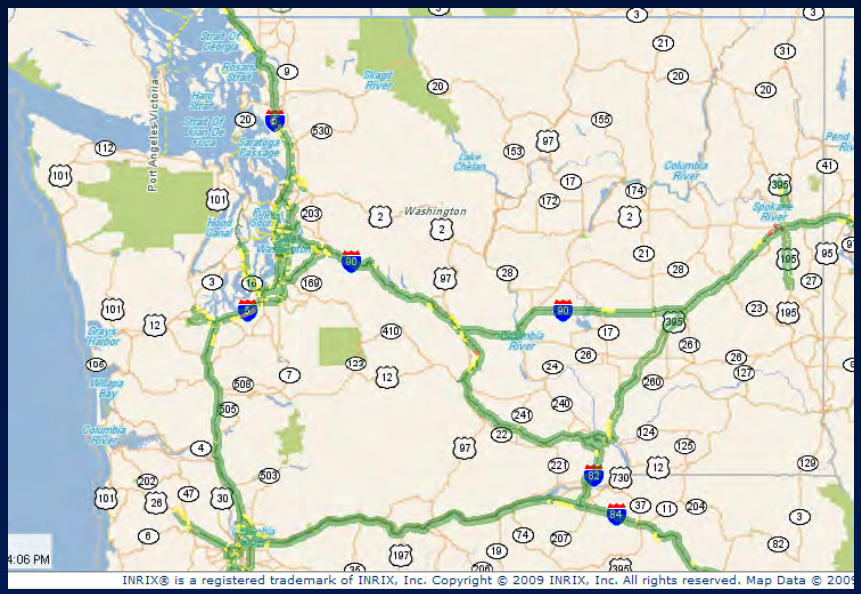
INRIX® Real-Time Traffic Flow Coverage in the U.S.

Benefits of licensing data from INRIX —

- ✓ **Broad Coverage —** Nearly all limited access roads in the U.S. are available today off-the-shelf.
- ✓ **Cost —** Data is provided to agencies under simple pricing models each of which is significantly less costly than the traditional alternatives.
- ✓ **Maintenance Free —** Properly operating and maintaining a sensor network requires substantial effort. Power and communications outages, vandalism, wear and tear, maintenance of traffic and worker safety are all concerns. INRIX data does not require a single new sensor to be deployed, operated or maintained.
- ✓ **Scalability —** Traditional data collection approaches require years of planning and implementation to cover entire regions or states. Often, as build-out of a large sensor network occurs, the early phases of implementation are technically or operationally obsolete before the network is even completed. INRIX data is available at the stroke of a pen on all major roads in an agencies area of interest. Agencies can start with coverage of any size and grow as needs and funding allows.
- ✓ **Network Effect —** A powerful attribute of the INRIX approach is that as new source data is added – more data from commercial vehicle and consumer device probes for example – all customers automatically benefit without any additional effort or cost from the customer perspective. INRIX is committed to continuing to increase source data. With nearly 10 times the data available today than 2 years ago, INRIX data is the highest quality traffic information on the market.
- ✓ **Licensing Terms —** INRIX has established the most liberal licensing terms in the industry. In short, agencies that license INRIX data can use it to support their internal and travel information applications without limitations.

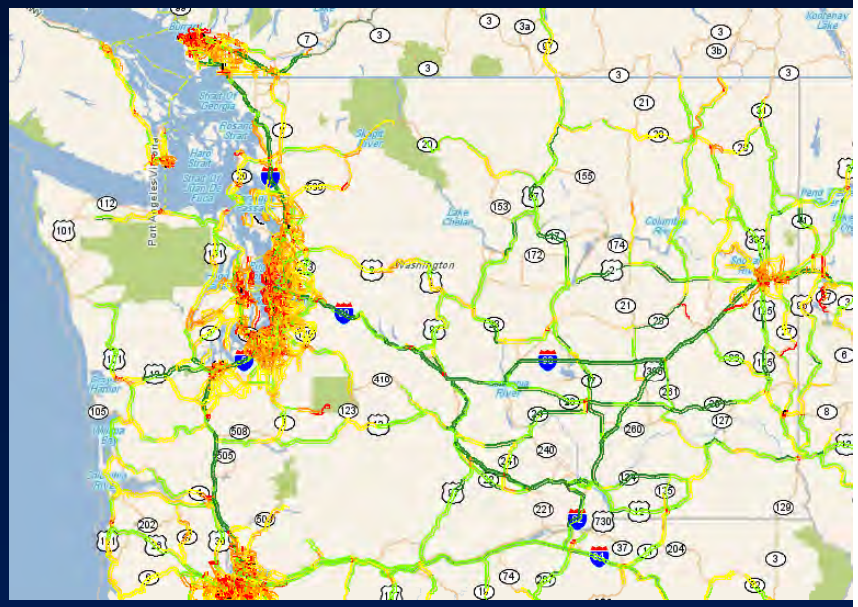
Current Solutions – Real-Time

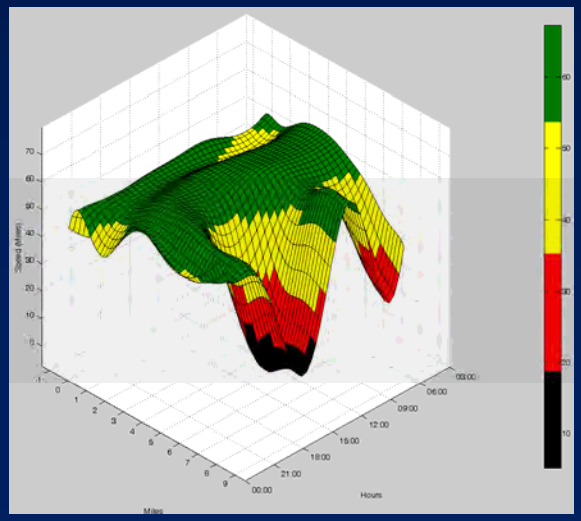
- Products
  - Traffic Speeds/Travel Times
  - Route Travel Times
  - Traffic Alerts
    - o "Slow traffic I-5 from Exit x to y, avg speed 25 MPH")
  - Weather Alerts
  - Road Closure Alerts
- Delivery methods
  - Data feed, monitoring site, overlay image ("tiles")
- Current WA coverage – see above
  - Also support over the border coverage (OR, ID, BC)



Current Solutions – Analysis

- Products
  - Nationwide Average Speeds
  - Route Travel Times
  - Corridor Analysis
    - Scorecard
    - High Resolution Analysis (New)
- Delivery methods
  - Data feed, DVD, Reports
- Current WA coverage – see above
  - Real-time coverage plus state highways and urban arterials
  - Also support over the border coverage (OR, ID, BC)

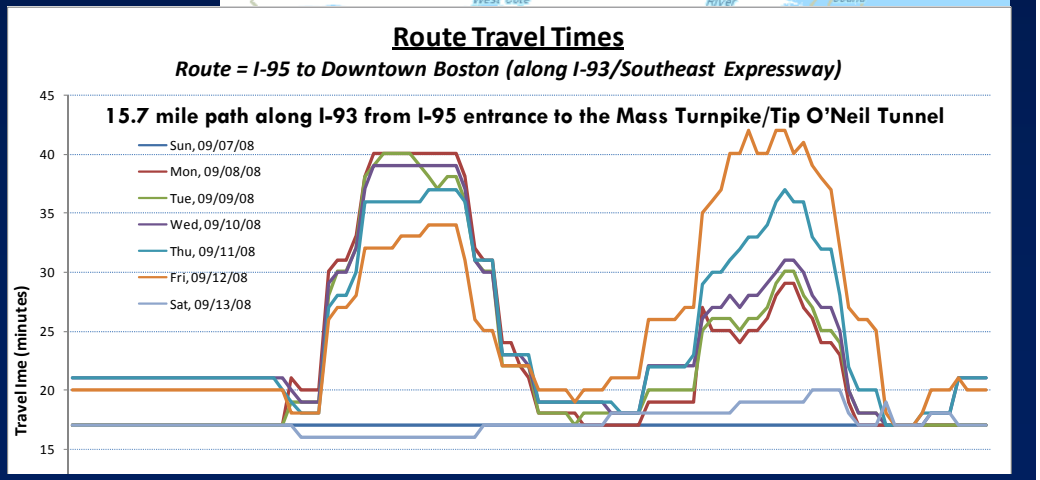




Applications

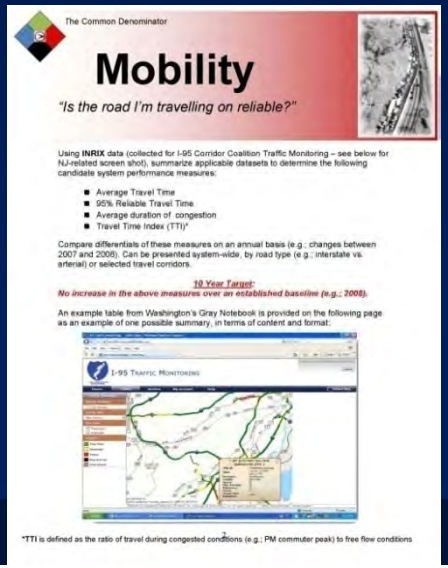
- **Real-time "Situational Awareness"**
  - Operations Centers
  - Traveler Information/511
  - Work Zones
  - Weather/Evacuation events
  - Etc.
- **Performance Measurement**
  - Network Analysis
  - Event Analysis
  - Operations Assessment
  - Work Zones
  - Etc.

Hurricane Gustav Evacuation (Sept 1, 2009)



Sample Public Sector Projects

- I-95 Corridor Coalition Vehicle Probe Project
  - Situational Awareness
  - Travel Times on Signs
  - 511 Phone/Web support
  - Performance Measures
- Alabama DOT – Travel Times on Signs
- South Carolina DOT – Travel Times on Signs
- Wisconsin DOT – Milwaukee to Green Bay Situational awareness



I-95 Vehicle Probe Project

Client

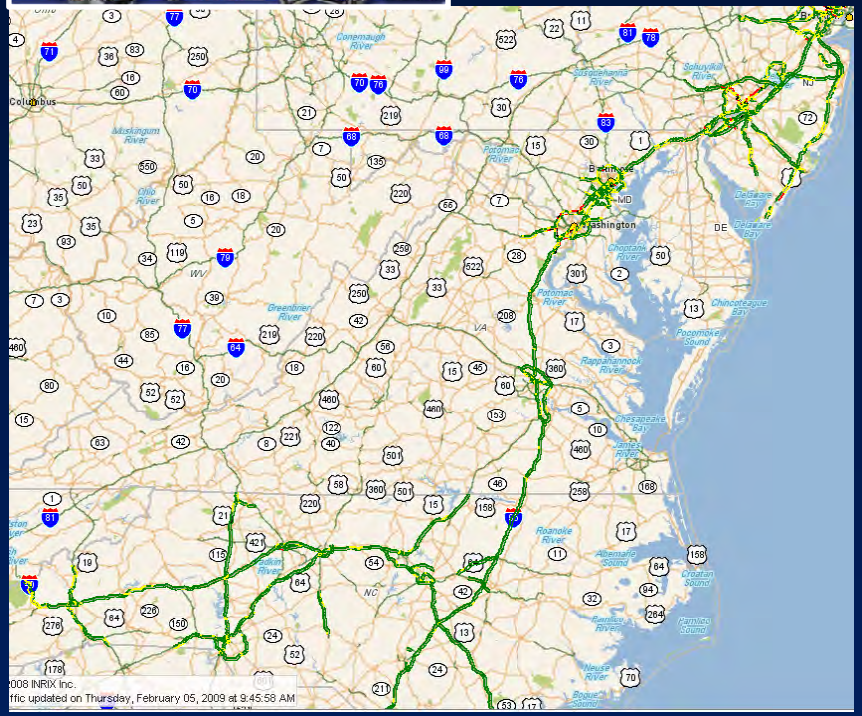
- I-95 Corridor Coalition

Coalition Background

- Coalition created by Congress in ISTEA
- Primary members transportation agencies from Maine to Florida

Need

- “a regional traffic monitoring system …
- a continuous source of real-time transportation system status information within the Corridor.”



http://www.i95coalition.org/vehicle-probe.html

Project Status

Current Coverage

- Freeways: 2857 Centerline miles
- Arterials: 870 Centerline miles
- From NJ to NC
- ~ 9000 Road Segments

Data Access (as Mar 6, 2009)

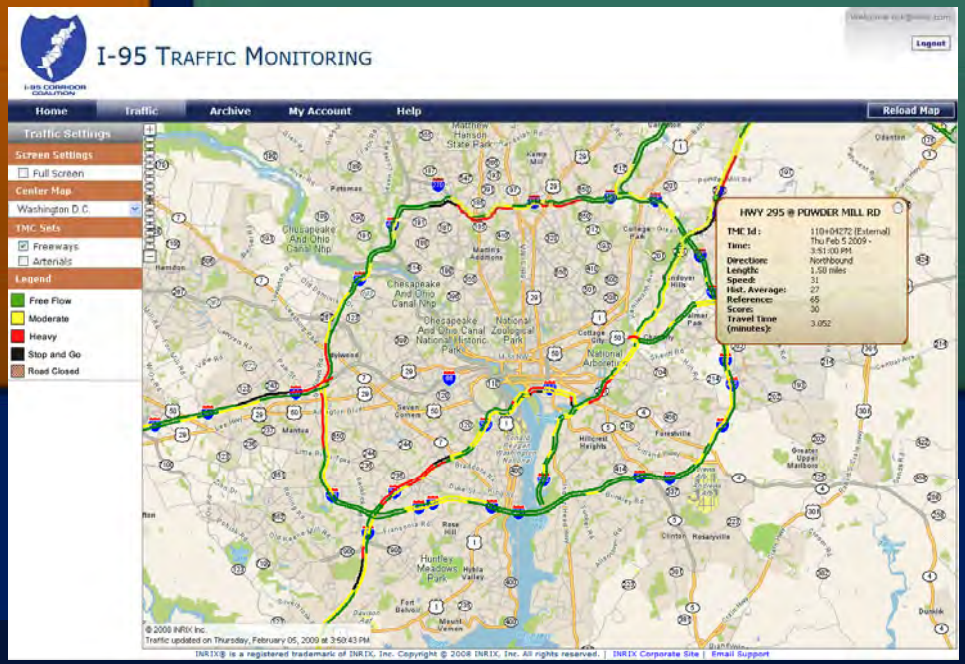
- 12 member agencies have access
- 127 monitoring site users
- 17 data feed users

Operational since July 2008

- Monitoring Site: 99.9%+
- Data Feed: 99.9%+

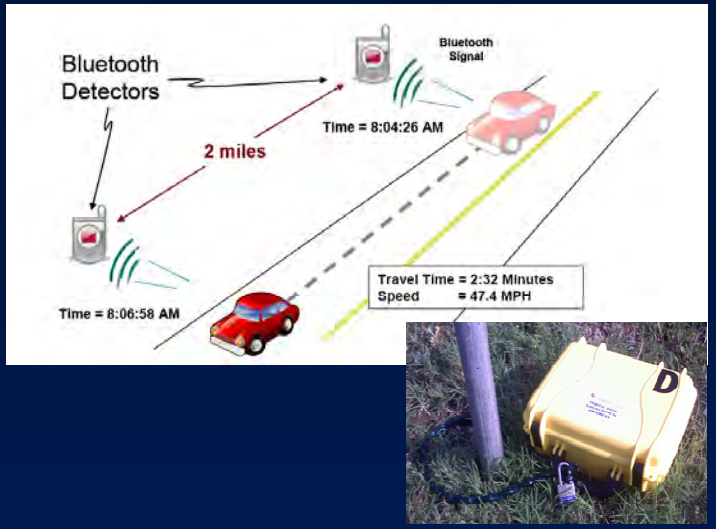
Breakthroughs/Models

- Purchase data, not equipment
- INRIX pricing – per mile
- Multi-agency procurement
- Data licensing/use terms
- Validation methods
- Payment for performance metrics

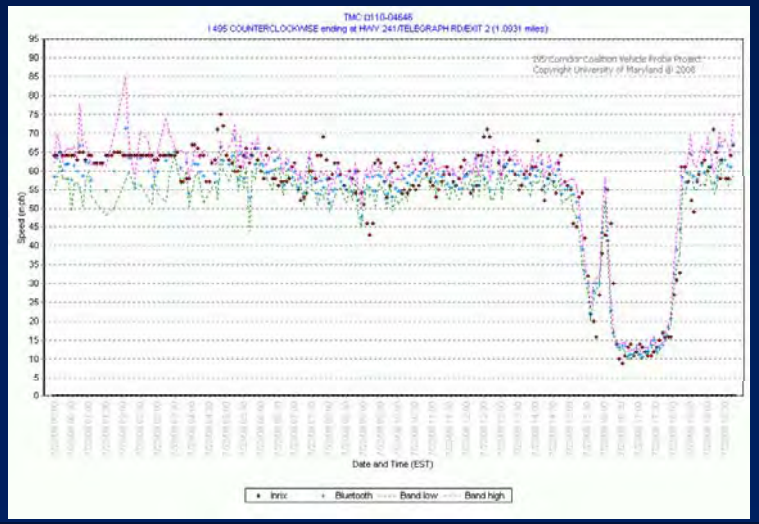


Initial Validation

- Data meets contract quality specifications
- Coalition/UMd utilized novel “Bluetooth” approach for testing
  - Largest test ever of this kind in U.S.
  - 54 segments, 111 miles
  - 1,500+ hours,19,000+ observations
  - 4 states over 4 months



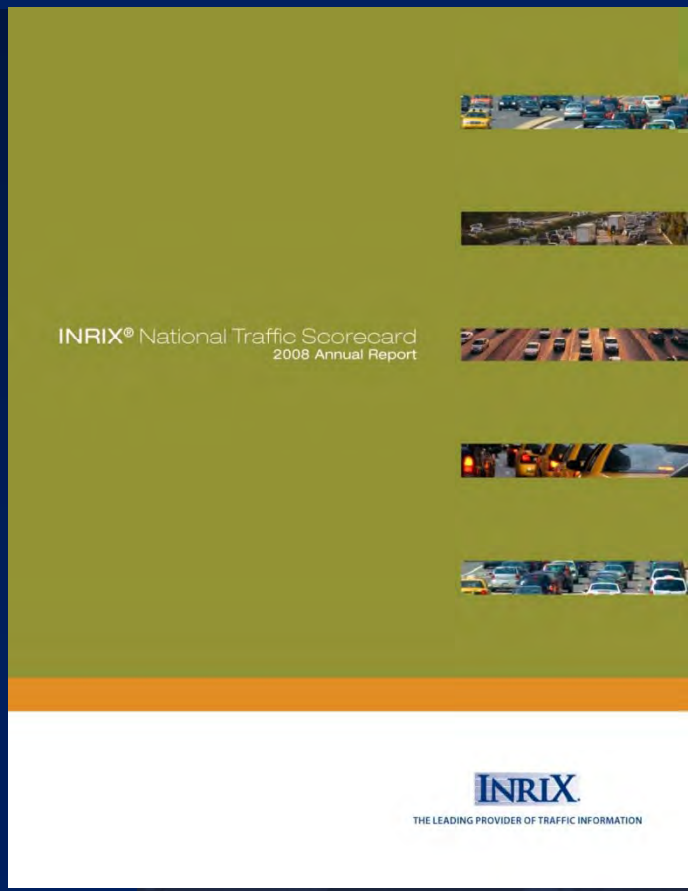
Speed Range (MPH)	Average Absolute Error (MPH)	Speed Bias (MPH)	Total Observations	Observations Error < 5MPH
< 30	5.9	3.8	344	63%
30-45	6.9	2.2	636	48%
45-60	2.3	0.2	3904	84%
> 60	2.3	-1.7	14,118	87%
Overall	**2.5**	**-1.0**	**19,002**	**85%**



Looking Forward

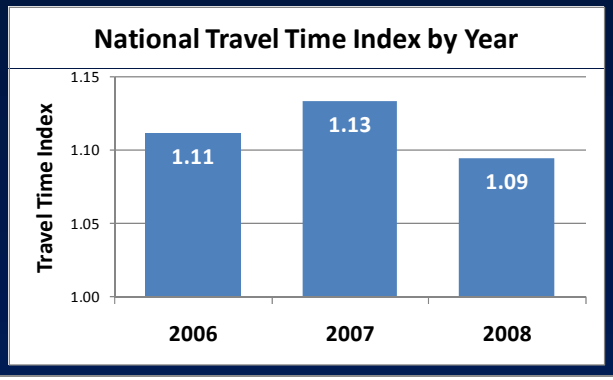
- **Continuous quality improvements**
- **Expand “real-time” coverage**
  - **Arterials**
  - **State highways**
- **Expand support for performance measurement**
- **Pricing projects**
  - **VMT-like projects (w/o need for gas station retrofits)**
  - **Managed and priced lanes strategy optimization**
    - Planning
    - Real-time changes based on conditions and near-term forecasts

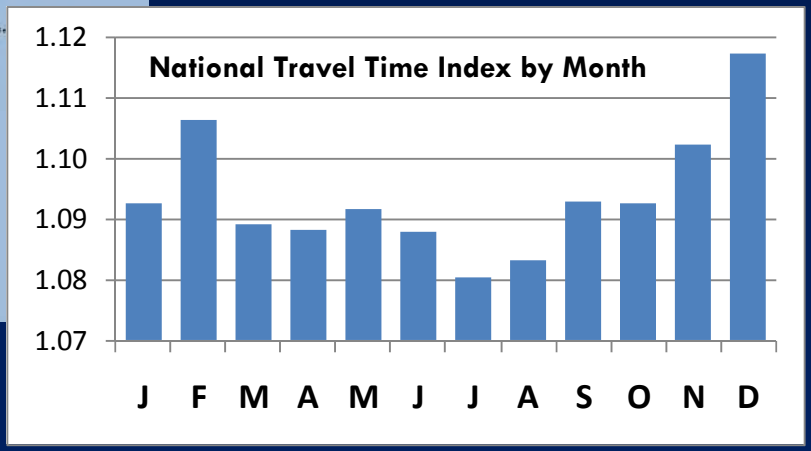
INRIX National Traffic Scorecard



INRIX National Traffic Scorecard

- Annual Report of traffic conditions
- Major highways in top 100 metropolitan US markets
- Specific road segment performance analysis

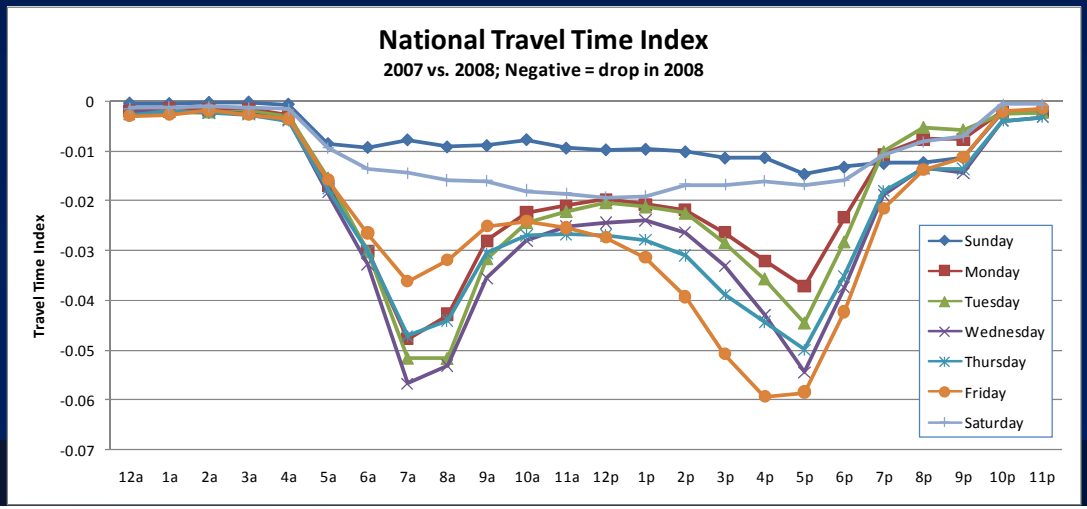




scorecard.inrix.com

Scorecard – 2008 Analysis

- **National Congestion vs. 2007**
  - **Down ~30% overall**
  - **Down in 99 of 100 markets**
  - **Down every hour/day of week**
- **National Bottlenecks**
  - **Worst Bottlenecks generally the same**
    - Biggest movers up/down were work zones
  - **Fewer total Bottlenecks identified**
    - Much moderate congestion “evaporated”



2008 Metropolitan Rankings

Total Peak Period Congestion

Rank	Area (Population Rank)	% of Worst Market*	Rank Change from 2007
1	Los Angeles-Long Beach-Santa Ana CA (2)	100%	0
2	New York-Northern New Jersey-Long Island NY-NJ-PA (1)	87%	0
3	Chicago-Naperville-Joliet IL-IN-WI (3)	48%	0
4	Dallas-Fort Worth-Arlington TX (4)	39%	+1
5	Washington-Arlington-Alexandria DC-VA-MD-WV (8)	36%	-1
6	Houston-Sugar Land-Baytown TX (6)	34%	+1
7	San Francisco-Oakland-Fremont CA (12)	33%	-1
8	Boston-Cambridge-Quincy MA-NH (10)	27%	0
9	Seattle-Tacoma-Bellevue WA (15)	24%	0
10	Minneapolis-St. Paul-Bloomington MN-WI (16)	22%	+3

* % Compared to Worst Market (Los Angeles Region)

Peak Period Travel Time Index (TTI)

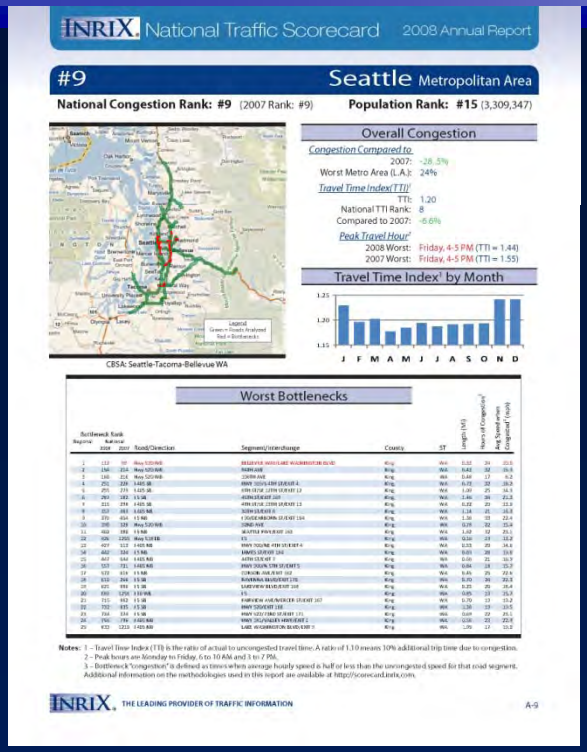
Rank	Area (Population Rank)	TTI	Rank Change from 2007
1	Los Angeles-Long Beach-Santa Ana CA (2)	1.33	+1
2	Honolulu HI (54)	1.31	-1
3	Austin-Round Rock TX (37)	1.23	+4
4	San Francisco-Oakland-Fremont CA (12)	1.23	0
5	New York-Northern New Jersey-Long Island NY-NJ-PA (1)	1.22	0
6	Bridgeport-Stamford-Norwalk CT (56)	1.21	-3
7	Washington-Arlington-Alexandria DC-VA-MD-WV (8)	1.20	+1
8	Seattle-Tacoma-Bellevue WA (15)	1.20	-2
9	Chicago-Naperville-Joliet IL-IN-WI (3)	1.19	+1
10	San Jose-Sunnyvale-Santa Clara CA (31)	1.16	+1

INRIX

Top 1000 National Bottlenecks (Red)

- 31 in Seattle area
- 14 in Portland area (1 in Washington)

Seattle Area Results


INRIX National Traffic Scorecard 2008 Annual Report

#9 Seattle Metropolitan Area

National Congestion Rank: #9 (2007 Rank: #9) **Population Rank: #15** (3,309,347)

Overall Congestion

Congestion Compared to
2007: -28..5%
Worst Metro Area (L.A.): 24%

Travel Time Index(TTI)[1]
TTI: 1.20
National TTI Rank: 8
Compared to 2007: -6.6%

Peak Travel Hour[2]
2008 Worst: Friday, 4-5 PM (TTI = 1.44)
2007 Worst: Friday, 4-5 PM (TTI = 1.55)

Travel Time Index[1] by Month

CBSA: Seattle-Tacoma-Bellevue WA

Worst Bottlenecks

INRIX. THE LEADING PROVIDER OF TRAFFIC INFORMATION

Overall Congestion

Congestion Compared to

2007: -28..5%

Worst Metro Area (L.A.): 24%

Travel Time Index(TTI)[1]

TTI: 1.20

National TTI Rank: 8

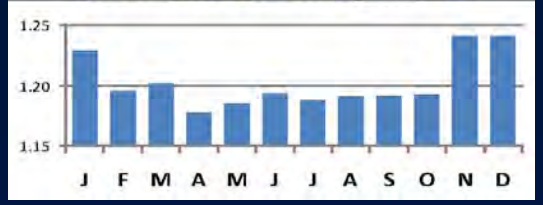
Compared to 2007: -6.6%

Peak Travel Hour[2]

2008 Worst: Friday, 4-5 PM (TTI = 1.44)

2007 Worst: Friday, 4-5 PM (TTI = 1.55)

Travel Time Index[1] by Month

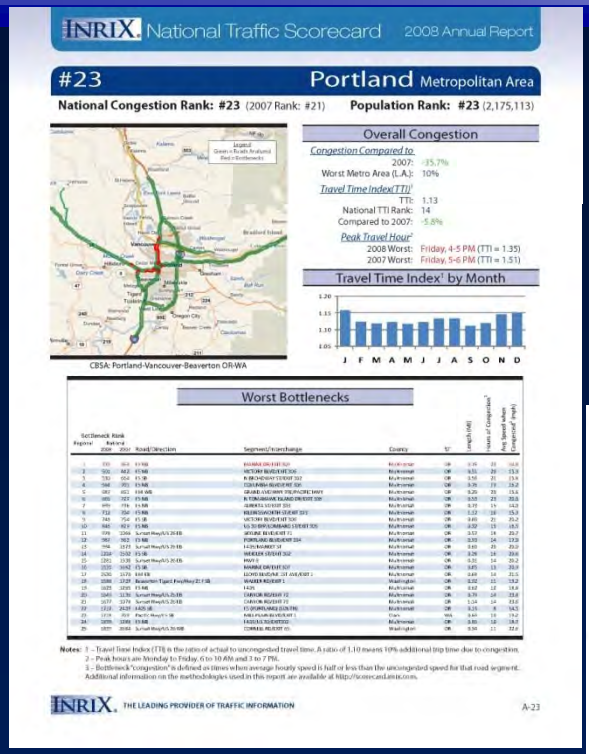


Worst Bottlenecks

Bottleneck Rank Regional	Bottleneck Rank National 2008	Bottleneck Rank National 2007	Road/Direction	Segment/Interchange	County	ST	Length (Mi)	Hours of Congestion[3]	Avg Speed when Congested[3] (mph)
1	112	99	Hwy 520 WB	BELLEVUE WAY/LAKE WASHINGTON BLVD	King	WA	0.33	24	10.0
2	154	214	Hwy 520 WB	84TH AVE	King	WA	0.43	32	15.3
3	160	216	Hwy 520 WB	108TH AVE	King	WA	0.48	17	8.2
4	251	228	I 405 SB	HWY 169/S 4TH ST/EXIT 4	King	WA	0.73	32	18.2
5	255	279	I 405 SB	8TH ST/SE 12TH ST/EXIT 12	King	WA	1.09	25	14.9
6	287	182	I 5 SB	45TH ST/EXIT 169	King	WA	1.46	34	21.3
7	315	298	I 405 SB	4TH ST/SE 13TH ST/EXIT 13	King	WA	0.22	20	13.0
8	357	483	I 405 NB	30TH ST/EXIT 6	King	WA	1.14	21	14.3
9	370	454	I 5 NB	I 90/DEARBORN ST/EXIT 164	King	WA	1.36	33	22.4
10	390	328	Hwy 520 WB	92ND AVE	King	WA	0.78	22	15.4
11	402	380	I 5 NB	SEATTLE FWY/EXIT 163	King	WA	1.62	32	23.1
12	426	1255	Hwy 518 EB	I 5	King	WA	0.16	19	13.2
13	427	513	I 405 NB	HWY 900/NE 4TH ST/EXIT 4	King	WA	0.53	20	14.6
14	442	324	I 5 NB	JAMES ST/EXIT 164	King	WA	0.69	28	19.6
15	447	644	I 405 NB	44TH ST/EXIT 7	King	WA	0.66	21	16.9
16	557	731	I 405 NB	HWY 900/N 5TH ST/EXIT 5	King	WA	0.84	18	15.7
17	572	616	I 5 NB	CORSON AVE/EXIT 162	King	WA	0.45	25	22.6
18	610	266	I 5 SB	RAVENNA BLVD/EXIT 170	King	WA	0.70	24	22.3
19	621	886	I 5 SB	LAKEVIEW BLVD/EXIT 168	King	WA	0.23	20	18.4
20	689	1256	I 90 WB	I 5	King	WA	0.85	19	15.7
21	715	862	I 5 SB	FAIRVIEW AVE/MERCER ST/EXIT 167	King	WA	0.70	19	19.2
22	732	835	I 5 SB	HWY 520/EXIT 168	King	WA	1.36	19	19.5
23	734	374	I 5 SB	HWY 522/73RD ST/EXIT 171	King	WA	0.69	22	23.1
24	756	796	I 405 NB	HWY 181/VALLEY HWY/EXIT 1	King	WA	0.56	23	22.9
25	833	1210	I 405 NB	LAKE WASHINGTON BLVD/EXIT 9	King	WA	1.95	17	19.0

INRIX

Portland Area Results


INRIX National Traffic Scorecard 2008 Annual Report

#23 Portland Metropolitan Area

National Congestion Rank: #23 (2007 Rank: #21) **Population Rank: #23** (2,175,113)

Overall Congestion

Congestion Compared to
2007: -35.7%
Worst Metro Area (L.A.): 10%

Travel Time Index(TTI)[1]
TTI: 1.13
National TTI Rank: 14
Compared to 2007: -5.8%

Peak Travel Hour[2]
2008 Worst: Friday, 4-5 PM (TTI = 1.35)
2007 Worst: Friday, 5-6 PM (TTI = 1.51)

Travel Time Index[1] by Month

CBSA: Portland-Vancouver-Beaverton OR-WA

Worst Bottlenecks

INRIX. THE LEADING PROVIDER OF TRAFFIC INFORMATION A-23

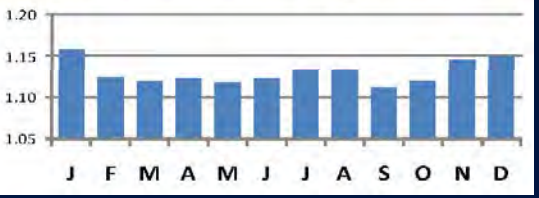
Overall Congestion

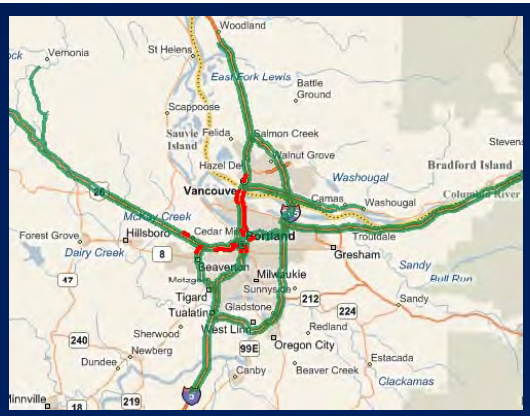
Congestion Compared to
2007: -35.7%
Worst Metro Area (L.A.): 10%

Travel Time Index(TTI)[1]
TTI: 1.13
National TTI Rank: 14
Compared to 2007: -5.8%

Peak Travel Hour[2]
2008 Worst: Friday, 4-5 PM (TTI = 1.35)
2007 Worst: Friday, 5-6 PM (TTI = 1.51)

Travel Time Index[1] by Month





Worst Bottlenecks

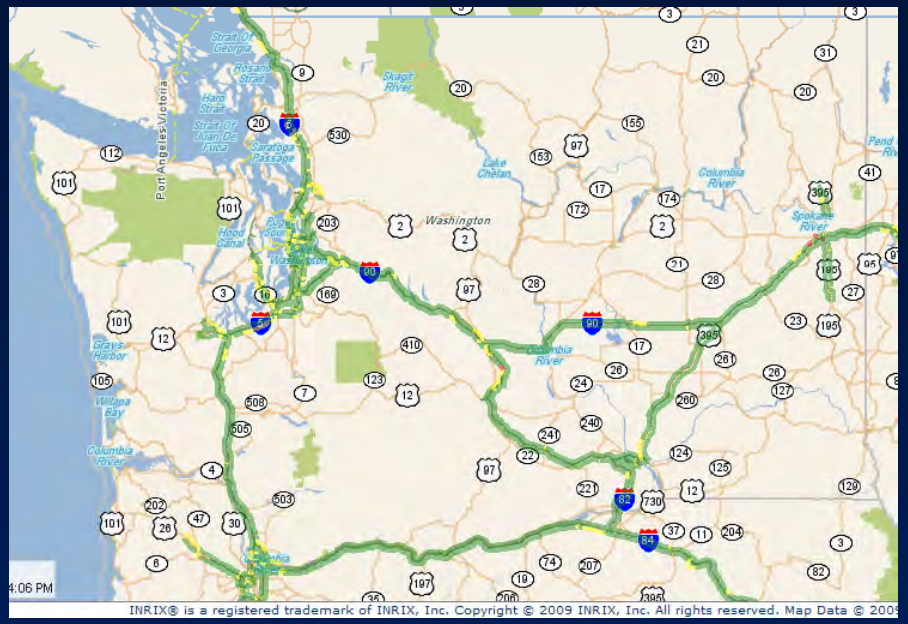
Bottleneck Rank Regional	Bottleneck Rank National 2008	Bottleneck Rank National 2007	Road/Direction	Segment/Interchange	County	ST	Length (Mi)	Hours of Congestion[3]	Avg Speed when Congested[3] (mph)
1	335	364	I 5 NB	MARINE DR/EXIT 307	Multnomah	OR	0.76	23	14.8
2	501	442	I 5 NB	VICTORY BLVD/EXIT 306	Multnomah	OR	0.51	20	15.9
3	530	664	I 5 SB	N BROADWAY ST/EXIT 302	Multnomah	OR	0.56	21	15.8
4	584	701	I 5 NB	COLUMBIA BLVD/EXIT 306	Multnomah	OR	0.76	19	16.2
5	587	651	I 84 WB	GRAND AVE/HWY 99E/PACIFIC HWY	Multnomah	OR	0.20	20	15.6
6	665	727	I 5 NB	N TOMAHAWK ISLAND DR/EXIT 308	Multnomah	OR	0.53	23	20.0
7	699	736	I 5 NB	ALBERTA ST/EXIT 303	Multnomah	OR	0.73	15	14.0
8	712	704	I 5 NB	KILLINGSWORTH ST/EXIT 303	Multnomah	OR	1.12	16	15.3
9	748	754	I 5 SB	VICTORY BLVD/EXIT 306	Multnomah	OR	0.60	21	20.2
10	846	829	I 5 NB	US 30 BYP/LOMBARD ST/EXIT 305	Multnomah	OR	0.32	15	16.5
11	978	1066	Sunset Hwy/US 26 EB	SKYLINE BLVD/EXIT 71	Multnomah	OR	0.57	18	20.7
12	987	963	I 5 NB	PORTLAND BLVD/EXIT 304	Multnomah	OR	0.93	14	17.0
13	994	1373	Sunset Hwy/US 26 EB	I 405/MARKET ST	Multnomah	OR	0.60	20	20.0
14	1224	1502	I 5 SB	WEIDLER ST/EXIT 302	Multnomah	OR	0.28	16	20.6
15	1281	1936	Sunset Hwy/US 26 EB	HWY 8	Multnomah	OR	0.31	14	20.2
16	1515	1682	I 5 SB	MARINE DR/EXIT 307	Multnomah	OR	0.65	13	20.9
17	1530	1570	I 84 EB	LLOYD BLVD/NE 1ST AVE/EXIT 1	Multnomah	OR	0.68	14	21.5
18	1588	1739	Beaverton Tigard Fwy/Hwy 217 SB	WALKER RD/EXIT 1	Washington	OR	0.92	11	19.2
19	1623	1265	I 5 NB	I 405	Multnomah	OR	0.62	12	18.6
20	1649	1136	Sunset Hwy/US 26 EB	CANYON RD/EXIT 72	Multnomah	OR	0.79	14	23.8
21	1677	1078	Sunset Hwy/US 26 EB	CANYON RD/EXIT 73	Multnomah	OR	1.14	14	23.6
22	1712	2439	I 405 SB	I 5 (PORTLAND) (SOUTH)	Multnomah	OR	0.15	8	14.5
23	1718	709	Pacific Hwy/I 5 SB	MILL PLAIN BLVD/EXIT 1	Clark	WA	0.64	10	19.2
24	1838	1288	I 5 NB	I 405/US 30/EXIT302	Multnomah	OR	0.80	10	18.9
25	1839	2684	Sunset Hwy/US 26 WB	CORNELL RD/EXIT 65	Washington	OR	0.94	11	22.6

Scorecard Implications

- **Process Implications**
  - **"Keeping score" is possible and increasingly easy**
  - **More markets, road segments, time slices and road types than before**
  - **Output of results can occur quicker than ever**
  - **Can integrate with other datasets**
  - **Support "before/after," trend, and reliability analyses**
- **Policy Implications**
  - **Even in a slowdown with high/volatile fuel prices, congestion is a pervasive problem**
  - **Bottlenecks are everywhere**
    - Construction's double edge sword – near-term pain, long-term gain
  - **2007 Lessons**
    - No margin for error in many cities
  - **2008 Lessons**
    - All little demand management can help a lot – at least in some places

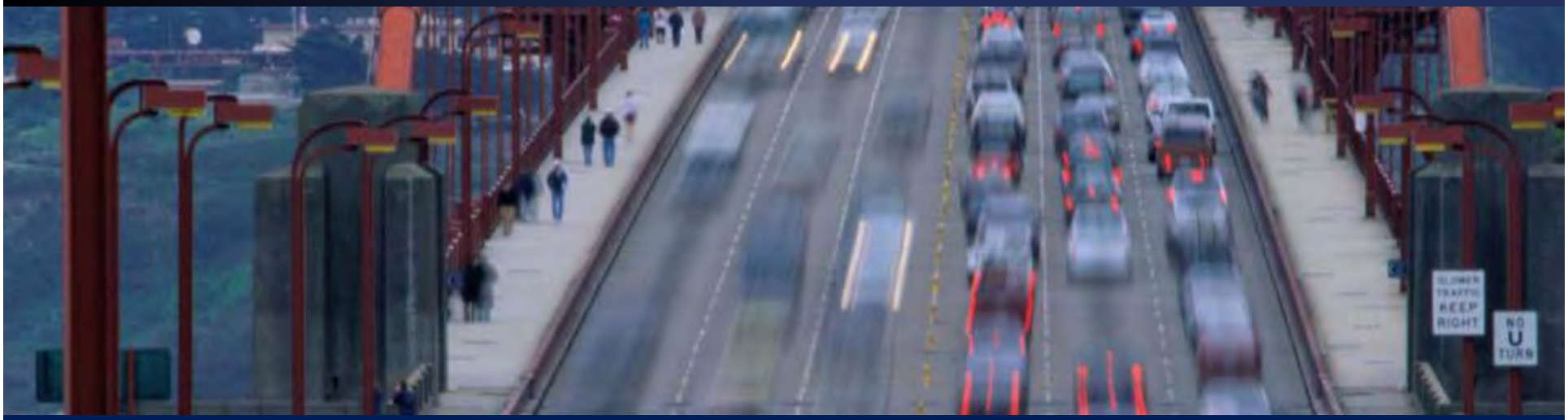
Scorecard – Final Notes

- INRIX will continue to provide national level results in the public domain
- Data supporting Scorecard available for licensing by agencies/others
- Coverage available beyond Seattle and Portland metros
  - Spokane (107th largest metro)
  - Olympia (182nd largest metro)
  - Bremerton (183rd largest metro)
  - Non-urban real-time coverage (e.g. I-5, I-90, etc.)



Overview and National Traffic Scorecard

Bryan Mistele, CEO, INRIX



10210 NE Points Dr, Suite 300
Kirkland, WA 98033
425-284-3800
Bryan@inrix.com